



# AFCTN Test Report

## 94-045

# AFCTB-ID

## 93-085



Technical Engineering Drawing Transfer

Using:



Lockheed Missile & Space Company's Data



Supporting:

The Joint Advance Rocket System

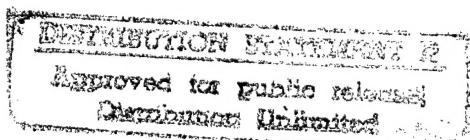
Contract #N00019-9-2-C-185



MIL-D-28000A (IGES)

Quick Short Test Report

02 September 1993



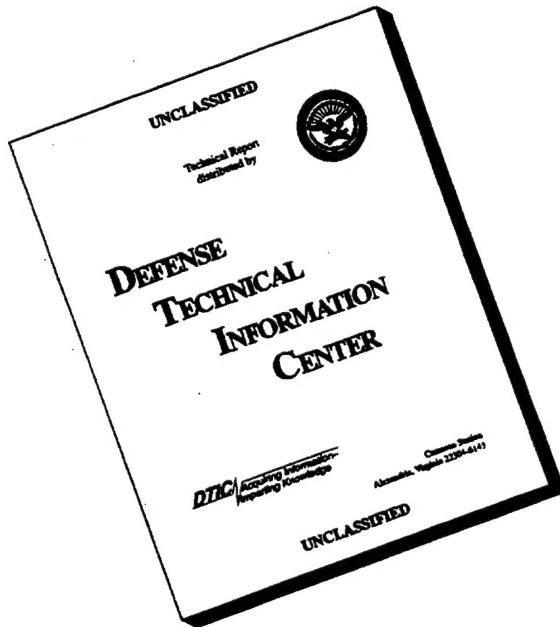
19960822 175



Prepared for  
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**AFCTN Test Report**  
**94-045**

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**Quick Short Test Report**

**02 September 1993**

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## 1. Introduction

### 1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

## **1.2 Purpose**

The purpose of the informal test, reported in this QSTR, was to analyze Lockheed Missile & Space Company's interpretation and use of the CALS standards in transferring technical engineering data. Lockheed used its Sun Sparc server 670 MP with Cadkey's v5.2 software to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

## 2. Test Parameters

**Test Plan:** AFCTB 93-085

**Date of Evaluation:** 02 September 1993

**Evaluator:**  
George Elwood  
Air Force CALS Test Bed  
Det 2 HQ ESC/AV-2P  
4027 Colonel Glenn Hwy  
Suite 300  
Dayton OH 45431-1672

**Data Originator:**  
Tom Benjamin  
Lockheed Missile & Space Company  
T4-02, 312, 3  
6800 Burleson Road  
P.O. Box 17100  
Austin TX 78760-7100  
(512) 386-2887

**Data Description:**  
Technical Manual Test  
2 Document Declaration files  
2 Initial Graphics Exchange Specification  
(IGES) files

**Data Source System:**  
1840  
    **HARDWARE**  
        Unknown  
    **SOFTWARE**  
        AFCTN Tapetool v1.2.10 UNIX

    IGES  
    **HARDWARE**  
        SUN Sparc Server 670 MP  
    **SOFTWARE**  
        Cadkey/UX v5.2

**Evaluation Tools Used:**

**MIL-STD-1840A (TAPE)**

SUN 3/280

AFCTN Tapetool v1.2.10 UNIX  
XSoft CAPS/CALS v40.4

**MIL-D-28000 (IGES)**

Sun SparcStation 2

ArborText *iges2draw*  
Carberry *CADLeaf Plus* v3.1  
IGES Data Analysis (IDA) *Parser/Verifier* v92  
IDA *IGESView* v3.05  
IDA *IGESXpert* v1.0  
Intergraph *I/EMS* 02.00.01.11  
Intergraph *I/CIGES* 02.00.01.03  
International Techne<sup>®</sup>roup Incorporated  
(ITI) *IGES/Works* v1.3  
Rosetta Technologies *Prepare*  
Rosetta Technologies *Preview* v3.2

PC 486/50

AUTODESK AutoCAD 386 R12  
Cadkey *Cadkey* v5.02  
IDA *IGESView Windows*  
Rosetta Technologies *Prepare*  
Rosetta Technologies *Preview*

**Standards**

**Tested:**

MIL-STD-1840A

MIL-D-28000A

### **3. 1840A Analysis**

#### **3.1 External Packaging**

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Tape reel did not have a label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Some 9-track tape units require this BPI to be set manually. Enclosed in the box was a packing list showing all files recorded on the tape.

#### **3.2 Transmission Envelope**

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

##### **3.2.1 Tape Formats**

The tape was run through the AFCTN Tapetool v1.2.10 utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using the XSoft CAPS read1840A utility without any reported errors.

The physical structure of the tape meets the CALS MIL-STD-1840A requirements.

##### **3.2.2 Declaration and Header Fields**

No errors were found in the Document Declaration files and data file headers. This portion of the tape meets the MIL-STD-1840A requirements.

#### 4. IGES Analysis

The tape contained two IGES files. These files were evaluated using IDA's parser/verifier set for CALS Class II. Both files were reported in error due to the use of IGES version 5.1. The use of this version is not permitted in the CALS MIL-D-28000A specification, except for Class V files. Also reported as an error was a missing drawing entity.

The Start section statement required by the MIL-D-28000A, para. 3.2.2.4.1 was not found.

The AFCTB has several tools for viewing IGES files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The files were converted using ArborText's *iges2draw* utility with no reported errors. The resulting files were read into Island Graphics' *IslandDraw*, displayed and printed without a reported error.

The files were read using AUTODESK's AutoCAD R12 with translator version 5.1. Some errors and warnings were generated during the conversion processes relating to font selections. The files were displayed and printed without a reported error. However, it was noted that the diameter symbol was displayed incorrectly on the screen and hard copy. It was displayed as a "n" instead of "ø".

The files were converted using Cadkey's *ig2c* utility. The resulting files were read into Cadkey's *Cadkey*, displayed and printed.

The files were read into Carberry's *CADLeaf* software without a reported error. The images displayed without a problem.

The files were read using IDA's *IGESView* and *IGESView for Windows*. No problems were noted during this procedure. The images were printed.

The IGES files were converted using Intergraph's *I/CIGES* utility without a reported error. The resulting files were read into *I/EMS* and displayed.

The files were read using ITI's *IGESWorks* without a reported error. The files were displayed and printed.

The IGES files were converted using Rosetta Technologies' *Prepare* without a reported error. However, it was noted that the diameter symbol was displayed incorrectly on the screen and hard copy. It was displayed as a "n" instead of " $\emptyset$ ". The resulting files were read into Rosetta Technologies' *Preview*, displayed and printed.

Because the required Start Section statement was missing, the IGES files do not meet the CALS MIL-D-28000A Class II specification.

## **5. SGML Analysis**

No Standard Generalized Markup Language (SGML) files were included on the tape.

## **6. Raster Analysis**

No Raster files were included on the tape.

## **7. CGM Analysis**

No Computer Graphics Metafile (CGM) files were included on the tape.

## 8. Conclusions and Recommendations

The MIL-STD-1840A tape from Lockheed Missiles & Space Company was correct. The tape could be read properly using the AFCTN Tapetools with no reported errors. The physical structure of the tape meets the CALS MIL-STD-1840A requirements.

The two IGES files do not meet the CALS MIL-D-28000A specification, because of the missing Start Section statement. The files were successfully imported into several software applications, displayed, and printed without a problem.

Because of the errors in the IGES files, the tape does not meet the CALS MIL-STD-1840A requirements.

## 9. Appendix A - Tapetool Report Logs

### 9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information  
ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes  
for Information Interchange  
ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Thu Sep 2 09:40:52 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set017

Page: 1

File Name Extracted	File Type	Record Format/ Selected/ Length Length/Total
D001 Extracted	Document Declaration	D/00260 02048/000001
D002 Extracted	Document Declaration	D/00260 02048/000001
D001Q001 Extracted	IGES	F/00080 02000/000118
D002Q001 Extracted	IGES	F/00080 02000/000103

Catalog Process terminated normally.

## 9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Thu Sep 2 09:40:40 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1<ALS01

4

Label Identifier: VOL1  
Volume Identifier: CALS01  
Volume Accessibility:  
Owner Identifier:  
Label Standard Version: 4

HDR1D001 CALS0100010001000000 93236 00000 000000

Label Identifier: HDR1  
File Identifier: D001  
File Set Identifier: CALS01  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 93236  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000000  
Implementation Identifier:

HDR2D0204800260 00

Label Identifier: HDR2  
Recording Format: D  
Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

<<<< PART OF LOG FILE REMOVED HERE >>>>

\*\*\*\*\* Tape Mark \*\*\*\*\*

##### End of Volume CALS01 #####

##### End Of Tape File Set #####

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

## 9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Thu Sept 2 09:40:52 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set017

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: LMSC Austin Division, 6800 Burleson Rd., P O Box 17100, Austin TX  
78760-7100

srcdocid: 3320AS1223

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19930824

dstsys: Naval Air Warfare Center - Weapons Division NAWC-35B4 China Lake Ca  
93555-6001

dstdocid: 3320AS1223

dstrelid: NONE

dtetrn: 19930824

dlvacc: NONE

filcnt: Q1

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: Test IGES drawing

Found file: D001Q001

Extracting IGES Header Records...

Evaluating IGES Header Records...

srcdocid: 3320AS1223

dstdocid: 3320AS1223

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

notes: NONE

Saving IGES Header File: D001Q001\_HDR  
Saving IGES Data File: D001Q001\_IGS

Evaluating numbering scheme...  
No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...  
No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D001.

Found file: D002  
Extracting Document Declaration Header Records...  
Evaluating Document Declaration Header Records...

srcsys: LMSC Austin Division, 6800 Burleson Rd., P O Box 17100, Austin TX  
78760-7100

srcdocid: 3320AS1224

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19930824

dstsys: Naval Air Warfare Center - Weapons Division NAWC-35B4 China Lake Ca  
93555-6001

dstdocid: 3320AS1224

dstrelid: NONE

dtetrn: 19930824

dlvacc: NONE

filcnt: Q1

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: Test IGES drawing

Found file: D002Q001  
Extracting IGES Header Records...  
Evaluating IGES Header Records...

srcdocid: 3320AS1224

dstdocid: 3320AS1224

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

notes: NONE

Saving IGES Header File: D002Q001\_HDR

---

Saving IGES Data File: D002Q001\_ICS

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D002.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

## 10. Appendix B - Detailed IGES Analysis

### 10.1 File D001Q001

#### 10.1.1 Parser/Verifier Log

```
*****
*****  IGES PARSER/VERIFIER  *****
*****      MARCH 1993      *****
*****  IGES Data Analysis   *****
*****      (708) 344-1815      *****
*****
```

Input file is /mnt/u1210/Set017/D001/D001Q001.IGS

Checking conformance to CALS Class II (MIL-D-28000A 2/10/92)

Today is September 3, 1993 8:31 AM

```
*****
*****  CHECK FILE SYNTAX  *****
*****
```

Section	Records
Start	1
Global	3
Directory	1708 ( 854 Entities)
Parameter	1171
Terminate	1

NITPICK 2489: Excess precision in real constant (0.707106781186548) for  
Mat[0][0] of D 13.

NITPICK 2489: Messages regarding excess precision suppressed.

```
*****
*****  SUMMARY AND STATISTICS  *****
*****
```

\*\*\* File and Product Name Information \*\*\*

```
File name from sender      = 'bgc12230.prt'
File creation Date.Time   = '930812.104941'
Model change Date.Time    = '930810.162925'
Author                      = ''
```

---

```
Department           = 'lad/bei'
Product name from sender = 'C2IG (Cadkey, Inc.)'
Destination product name = 'bgc12230.prt'
```

\*\*\* Parameter Delimiters \*\*\*

```
Delimiter = ','
Terminator = ';'
```

\*\*\* Originating System Data \*\*\*

```
System ID           = 'CADKEY/UX v5.02 07/02/92'
Preprocessor version = 'C2IG/UX SUN v5.02 08/05/92'
Specification version = 9 (IGES 5.1)
ERROR 4048: Illegal specification version for CALS Class II specified.
```

\*\*\* Precision levels \*\*\*

```
Integer bits = 16
Floating point - Exponent = 38 Mantissa = 7
Double precision - Exponent = 308 Mantissa = 15
```

\*\*\* Global Model Data \*\*\*

```
Model scale           = 1.0000E+00
Unit flag             = 1
Units                 = 'IN'
Line weights          = 1
Maximum line thickness = 1.000000E+00
Minimum line thickness = 1.000000E+00
CAUTION 2317: Maximum line thickness equal to minimum thickness.
Granularity           = 5.000000E-05
Maximum coordinate    = 0.000000E+00
CAUTION 2316: Maximum intended coordinate value of 0.000000E+00 will be
               defaulted to zero.
```

Drafting standard applicable to original data is not specified.

\*\*\* Status Flag Summary \*\*\*

Blank status: Visible	738
Blanked	116
Independence: Independent	808
Physically Subordinate	46
Logically Subordinate	0
Totally Subordinate	0
Entity use: Geometry	639

Annotation	215
Definition	0
Other	0
Logical/Positional	0
2D parametric	0
Construction geometry	0
Not Specified	0

Hierarchy:	Structure DE applies	854
	Subordinate DE applies	0
	Hierarchy property applies	0
	Not Specified	0

\*\*\* Entity Occurrence Counts \*\*\*

Entity	Form	Level	Count	Type
-----	-----	-----	-----	-----
100	0	1	8	Circular arc
100	0	19	4	
106	31	241	1	Section lines - General use, iron, brick, stone masonry
106	40	1	8	Witness line
106	40	241	8	
110	0	1	482	Line
110	0	11	9	
110	0	19	12	
110	0	256	116	
124	0	0	8	Transformation matrix
206	0	1	2	Diameter dimension
212	0	1	2	General note
212	1	1	4	General note - dual stack dimension
212	1	241	4	
212	6	1	147	General note - multiple stack/left justified
212	6	19	7	
212	6	241	4	
214	2	1	12	Leader arrow - Triangle
214	2	241	8	
216	0	1	4	Linear dimension
216	0	241	4	

ERROR 4030: CALS Class II requires that at least one drawing be defined.

\*\*\* Entity Count by Level \*\*\*

Level	Count
0	8
1	669

---

11	9
19	23
241	29
256	116

\*\*\* Labeling Information \*\*\*

100% of the entities are labeled.

Unlabeled 0

Label	Count	Label	Count	Label	Count
TMATRIX	8	LINE	619	GEN NOTE	168
LDR LINE	20	DIAM DIM	2	WIT LINE	16
LIN DIM	8	ARC	12	X-HATCH	1

\*\*\* Line Fonts Used in Data \*\*\*

100 102 104 106 108 110 112 114

-	-	-	-	-	-	-	-	Undefined
12	-	-	17	-	614	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	5	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

116 118 120 122 124 125 126 128

-	-	-	-	-	-	-	-	Undefined
-	-	-	-	8	-	-	-	Solid

<<<< PART OF LOG FILE REMOVED HERE >>>>

\*\*\* Line Widths Used in Data \*\*\*

Weight	Count	Width
Defaulted	854	(1.0000)

\*\*\* Colors Used in Data \*\*\*

Defaulted	8
Red	633
Green	152
White	61

```
*****  
***** ENTITY ANALYSIS *****  
*****
```

\*\*\* Entity type: 100

\*\*\* Entity type: 106

CAUTION 2331: Use of section lines (Form 31-38) is not recommended at D  
1643.

\*\*\* Entity type: 110

-- 619 lines averaging 9.754250E-01 units --

\*\*\* Entity type: 124

8 transformation matrices, 0 non-zero translations.

\*\*\* Entity type: 206

\*\*\* Entity type: 212

184 text strings in data file.  
Average text aspect ratio in file is 0.9174377.  
Minimum text aspect ratio in file is 0.9000000.  
Maximum text aspect ratio in file is 1.0869518.

#### FONTS USED IN FILE

FONT	COUNT	NAME
------	-------	------

1	176	Default ASCII Style
1001	2	Symbol Font 1
1002	4	Symbol Font 2
1003	2	Drafting Font

\*\*\* Entity type: 214

Average arrow aspect ratio in file is 3.0000001.  
Minimum arrow aspect ratio in file is 3.0000000.  
Maximum arrow aspect ratio in file is 3.0000002.

\*\*\* Entity type: 216

\*\*\* Message Summary \*\*\*

---

2018: 1 Problems with line weight/width display information.

4000: 1 Miscellaneous CALS messages

4011: 1 Problems in the Global section

\*\*\* Error Summary \*\*\*

0 fatal errors  
0 severe errors  
2 errors  
0 warnings  
3 cautions  
3679 nitpicks  
0 notes

\*\*\* End of Analysis of /mnt/u1210/Set017/D001/D001Q001\_IGS \*\*\*

## 10.1.2 Parser Log - AutoCAD R12

Title: IGESIN Journal (v5.1 Nov 05 1992)

=====

File: C:/TMP/Q8501.xli

Date: Thu, Sep 02, 1993

Time: 13:44:06

=====

EVALUATION VERSION -- NOT FOR RESALE

Translator S/N: 117-10075750

Translating from IGES file: C:/TMP/Q8501.IGS  
to AutoCAD Drawing: C:\TMP\Q8501.dwg

=====

Options obtained from: default settings

Curves Approximated to Tolerance of 0.01

Surfaces Approximated to Tolerance of 0.01

Text Font/Style mapping:

IGES Text font	Style Name	ACAD Font
0	SYMBOL0	iges0
1	STANDARD	txt
2	LEROY	txt
3	FUTURA	txt
6	COMP80	txt
12	GOTHICE	gothice
13	GOTHICI	gothici
14	ROMANS	romans
17	ROMANT	romant
18	ROMAND	romand
19	OCR	txt
1001	SYMBOL1	iges1001
1002	SYMBOL2	iges1002
1003	SYMBOL3	iges1003
2001	KANJI	bigfont

IGES Linefont/AutoCAD Linetype mapping

IGES Line Font	AutoCAD linetype	Shape file
0	BYLAYER	
1	CONTINUOUS	
2	DASHED	acad.lin
3	PHANTOM	acad.lin
4	CENTER	acad.lin
5	DOT	acad.lin

Parse phase

\*\*\* Warning (IAFP\_\_LARGER\_SGL\_SIG) \*\*\*  
C:/TMP/Q8501.IGS, line 4: IGES file has greater number of significant digits  
in single precision numbers than this system.

=====  
Start Section:

Global Section:

Parameter Delimiter: ,  
Record Delimiter: ;  
Sending Product ID: C2IG (Cadkey, Inc.)  
File Name: bgc12230.prt  
System ID: CADKEY/UX v5.02 07/02/92  
Preprocessor Version: C2IG/UX SUN v5.02 08/05/92  
Size of Integer: 16  
Sgl. Precision Mag: 38  
Sgl. Precision Sig: 7  
Dbl. Precision Mag: 308  
Dbl. Precision Sig: 15  
Receiving Product ID: bgc12230.prt  
Model Space Scale: 1.000000  
Unit Flag: 1  
Unit String: IN  
# of Line Weights: 1  
Maximum Line Width: 1.000000  
Creation Date: 08/12/93 10:49:41  
Minimum Resolution: 0.000050  
Maximum Coordinate: 0.000000  
Author:  
Organization: lad/bei  
IGES Version Number: 9  
Drafting Standard: 0  
Model Create/Modify Date: 08/10/93 16:29:25

Entity Summary:

Type	Form	Description
Count		
-----		
100	0	Circular Arc
12		
106	31	Section Entity
1		
106	40	Witness Line

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16  
110 0 Line  
619  
124 0 Transformation Matrix  
8  
206 0 Diameter Dimension  
2  
212 0 General Note (Simple)  
2  
212 1 General Note (Dual stack)  
8  
212 6 General Note (Left justified)  
158  
214 2 Leader (Triangle)  
20  
216 0 Linear dim - undetermined form  
8

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Total 854

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Translation phase

\*\*\* Warning (ACAD\_I2AMAKESTYLEERROR) \*\*\*  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: SYMBOL3

\*\*\* Warning (ACAD\_I2AMAKESTYLEERROR) \*\*\*  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: SYMBOL1

\*\*\* Warning (ACAD\_I2AMAKESTYLEERROR) \*\*\*  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: SYMBOL2

IGES Entity Summary

Type	Form	Description	Count	Processed	Errors
=====	=====	=====	=====	=====	=====
100	0	Circular Arc	12	12	0
106	31	Section Entity	1	1	0
106	40	Witness Line	16	16	0
110	0	Line	619	619	0
206	0	Diameter Dimension	2	2	0
212	0	General Note (Simple)	2	2	0

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212	1 General Note (Dual stack)	8	8	0
212	6 General Note (Left justified)	158	158	0
214	2 Leader (Triangle)	20	20	0
216	0 Linear dim - undetermined form	8	8	0
<hr/>				
<b>Totals</b>		<b>846</b>	<b>846</b>	<b>0</b>

AutoCAD Entity Summary

Entity	Created	Errors
LINE	716	0
CIRCLE	6	0
TEXT	166	0
ARC	6	0
INSERT	8	0
POLYLINE	1	0
DIMENSION	10	0
BLOCK	9	0
 <b>Totals</b>	 =====	 =====
	922	0

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Error Summary:

The following message was issued 1 time(s)  
IGES file has greater number of significant digits in single precision  
numbers than this system.

The following message was issued 8 time(s)  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: %s

Status: 0  
Warning: 9  
Error: 0  
Fatal: 0

Elapsed Time:

Processor: 00:00:18  
Clock: 00:00:19

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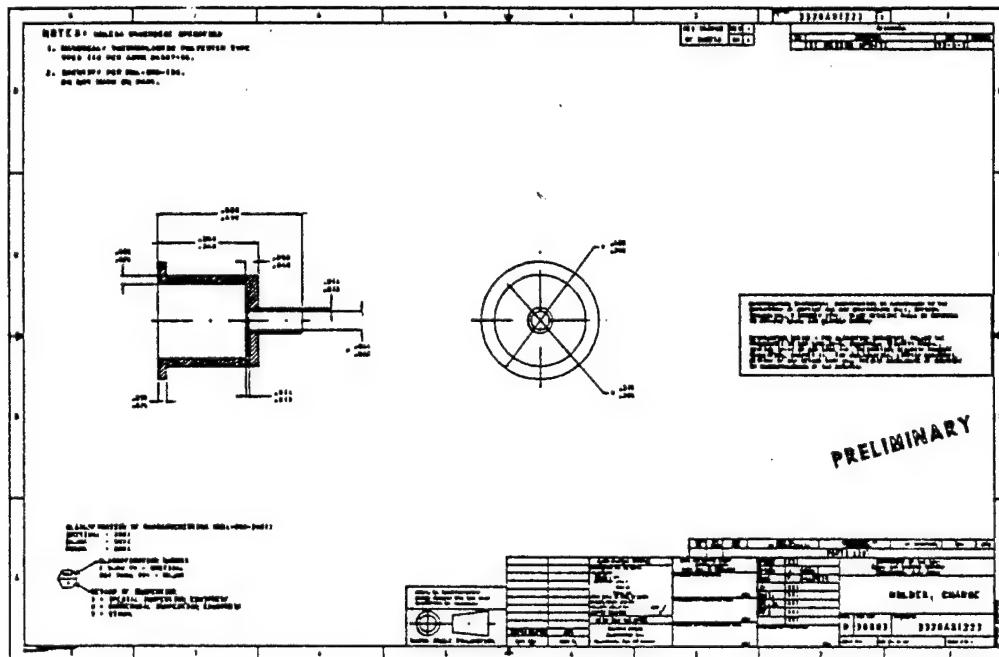
### 10.1.3 Output AutoCAD R12

#### 10.1.4 Output Cadkey v5.02

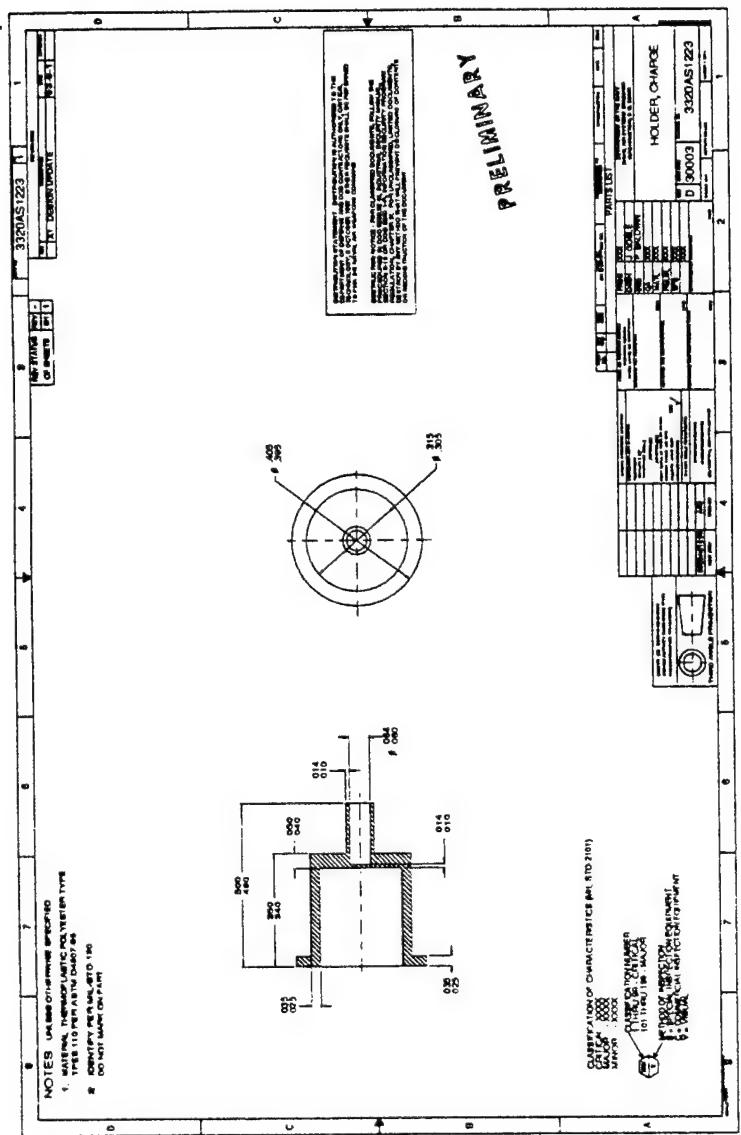
### 10.1.5 Output IGESView

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### 10.1.6 Output IGESWorks



### 10.1.7 Output iges2draw/IslandDraw



### 10.1.8 Output Preview

## 10.2 File D002Q001

### 10.2.1 Parser/Verifier Log

```
*****
*****  IGES PARSER/VERIFIER  *****
*****      MARCH 1993      *****
*****  IGES Data Analysis   *****
*****      (708) 344-1815   *****
*****
```

Input file is /mnt/u1210/Set017/D002/D002Q001\_IGS

Checking conformance to CALS Class II (MIL-D-28000A 2/10/92)

Today is September 3, 1993 8:31 AM

```
*****
*****  CHECK FILE SYNTAX  *****
*****
```

Section	Records
Start	1
Global	3
Directory	1566 ( 783 Entities)
Parameter	961
Terminate	1

NITPICK 2489: Excess precision in real constant (0.707106781186548) for  
Mat[0][0] of D 13.

NITPICK 2489: Messages regarding excess precision suppressed.

```
*****
*****  SUMMARY AND STATISTICS  *****
*****
```

\*\*\* File and Product Name Information \*\*\*

```
File name from sender      = 'bgc12240.prt'
File creation Date.Time   = '930812.105332'
Model change Date.Time    = '930810.163041'
Author                     = ' '
Department                = 'lad/bei'
Product name from sender = 'C2IG (Cadkey, Inc.)'
Destination product name = 'bgc12240.prt'
```

\*\*\* Parameter Delimiters \*\*\*

```
Delimiter = ','
Terminator = ';'
```

\*\*\* Originating System Data \*\*\*

```
System ID          = 'CADKEY/UX v5.02 07/02/92'
Preprocessor version = 'C2IG/UX SUN v5.02 08/05/92'
Specification version = 9 (IGES 5.1)
```

ERROR 4048: Illegal specification version for CALS Class II specified.

\*\*\* Precision levels \*\*\*

```
Integer bits = 16
Floating point - Exponent = 38 Mantissa = 7
Double precision - Exponent = 308 Mantissa = 15
```

\*\*\* Global Model Data \*\*\*

```
Model scale          = 1.0000E+00
Unit flag            = 1
Units                = 'IN'
Line weights         = 1
Maximum line thickness = 1.000000E+00
Minimum line thickness = 1.000000E+00
```

CAUTION 2317: Maximum line thickness equal to minimum thickness.

```
Granularity          = 5.000000E-05
Maximum coordinate   = 0.000000E+00
```

CAUTION 2316: Maximum intended coordinate value of 0.000000E+00 will be
defaulted to zero.

Drafting standard applicable to original data is not specified.

\*\*\* Status Flag Summary \*\*\*

Blank status: Visible	667
Blanked	116

Independence: Independent	775
Physically Subordinate	8
Logically Subordinate	0
Totally Subordinate	0

Entity use: Geometry	625
Annotation	158
Definition	0
Other	0

Logical/Positional	0
2D parametric	0
Construction geometry	0
Not Specified	0

Hierarchy:	Structure DE applies	783
	Subordinate DE applies	0
	Hierarchy property applies	0
	Not Specified	0

\*\*\* Entity Occurrence Counts \*\*\*

Entity	Form	Level	Count	Type
-----	---	-----	-----	-----
100	0	1	8	Circular arc
100	0	11	1	
106	40	241	2	Witness line
110	0	1	486	Line
110	0	11	6	
110	0	256	116	
124	0	0	8	Transformation matrix
206	0	1	1	Diameter dimension
212	0	1	1	General note
212	1	241	1	General note - dual stack dimension
212	6	1	135	General note - multiple stack/left justified
212	6	19	9	
212	6	241	4	
214	2	1	2	Leader arrow - Triangle
214	2	241	2	
216	0	241	1	Linear dimension

ERROR 4030: CALS Class II requires that at least one drawing be defined.

\*\*\* Entity Count by Level \*\*\*

Level	Count
0	8
1	633
11	7
19	9
241	10
256	116

\*\*\* Labeling Information \*\*\*

100% of the entities are labeled.

Unlabeled 0

Label	Count	Label	Count	Label	Count
TMATRIX	8	LINE	608	GEN NOTE	150
LDR LINE	4	DIAM DIM	1	ARC	9
WIT LINE	2	LIN DIM	1		

\*\*\* Line Fonts Used in Data \*\*\*

100 102 104 106 108 110 112 114

-	-	-	-	-	-	-	-	Undefined
9	-	-	2	-	604	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	4	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

116 118 120 122 124 125 126 128

-	-	-	-	-	-	-	-	Undefined
-	-	-	-	-	8	-	-	Solid

<<<< PART OF LOG FILE REMOVED HERE >>>>

\*\*\* Line Widths Used in Data \*\*\*

Weight	Count	Width
Defaulted	783	(1.0000)

\*\*\* Colors Used in Data \*\*\*

Defaulted	8
Red	627
Green	122
White	26

\*\*\*\*\*  
\*\*\*\*\* ENTITY ANALYSIS \*\*\*\*\*  
\*\*\*\*\*

\*\*\* Entity type: 100

\*\*\* Entity type: 106

```
*** Entity type: 110
-- 608 lines averaging 8.090938E-01 units --
*** Entity type: 124
8 transformation matrices, 0 non-zero translations.
*** Entity type: 206
*** Entity type: 212
ERROR 2279: Text box width (0.000000E+00) is negative or zero at D 1535.
ERROR 2279: Text box width (0.000000E+00) is negative or zero at D 1537.
156 text strings in data file.
Average text aspect ratio in file is 0.9020091.
Minimum text aspect ratio in file is 0.0000000.
Maximum text aspect ratio in file is 1.0869518.
```

#### FONTS USED IN FILE

FONT	COUNT	NAME
1	151	Default ASCII Style
1002	4	Symbol Font 2
1003	1	Drafting Font

```
*** Entity type: 214
Average arrow aspect ratio in file is 3.0000001.
Minimum arrow aspect ratio in file is 3.0000000
Maximum arrow aspect ratio in file is 3.0000002.
```

```
*** Entity type: 216
```

#### \*\*\* Message Summary \*\*\*

```
2012: 2 Inconsistent data for entity definition.
2018: 1 Problems with line weight/width display information.
4000: 1 Miscellaneous CALS messages
4011: 1 Problems in the Global section
```

#### \*\*\* Error Summary \*\*\*

```
0 fatal errors
0 severe errors
4 errors
0 warnings
```

2 cautions  
2999 nitpicks  
0 notes

\*\*\* End of Analysis of /mnt/u1210/Set017/D002/D002Q001\_IGS \*\*\*

## 10.2.2 Parser Log - AutoCAD R12

Title: IGESIN Journal (v5.1 Nov 05 1992)

File: C:/TMP/Q8502.xli

Date: Thu, Sep 02, 1993

Time: 13:44:30

EVALUATION VERSION -- NOT FOR RESALE

Translator S/N: 117-10075750

Translating from IGES file: C:/TMP/Q8502.IGS  
to AutoCAD Drawing: C:\TMP\Q8502.dwg

Options obtained from: default settings  
Curves Approximated to Tolerance of 0.01  
Surfaces Approximated to Tolerance of 0.01

Text Font/Style mapping:

IGES Text font	Style Name	ACAD Font
0	SYMBOL0	iges0
1	STANDARD	txt
2	LEROY	txt
3	FUTURA	txt
6	COMP80	txt
12	GOTHICE	gothice
13	GOTHICI	gothici
14	ROMANS	romans
17	ROMANT	romant
18	ROMAND	romand
19	OCR	txt
1001	SYMBOL1	iges1001
1002	SYMBOL2	iges1002
1003	SYMBOL3	iges1003
2001	KANJI	bigfont

IGES Linefont/AutoCAD Linetype mapping

IGES Line Font	AutoCAD linetype	Shape file
0	BYLAYER	
1	CONTINUOUS	
2	DASHED	acad.lin
3	PHANTOM	acad.lin
4	CENTER	acad.lin
5	DOT	acad.lin

=====  
Parse phase

\*\*\* Warning (IAFP\_LARGER\_SGL\_SIG) \*\*\*

C:/TMP/Q8502.IGS, line 4: IGES file has greater number of significant digits in single precision numbers than this system.

\*\*\* Warning (IEVM\_BAD\_BOX\_WIDTH\_NEG\_212) \*\*\*

(DE 1535, TF 212:6) Entity's substring #1 character box width is negative.

Action taken: Box width has been made positive.

\*\*\* Warning (IEVM\_BAD\_BOX\_WIDTH\_212) \*\*\*

(DE 1535, TF 212:6) Entity's substring #1 character box width equals zero.

Action taken: Box width has been changed to the default specified:  
1.0000000e+000.

\*\*\* Warning (IEVM\_BAD\_BOX\_WIDTH\_NEG\_212) \*\*\*

(DE 1537, TF 212:6) Entity's substring #1 character box width is negative.

Action taken: Box width has been made positive.

\*\*\* Warning (IEVM\_BAD\_BOX\_WIDTH\_212) \*\*\*

(DE 1537, TF 212:6) Entity's substring #1 character box width equals zero.

Action taken: Box width has been changed to the default specified:  
1.0000000e+000.

=====  
Start Section:

Global Section:

Parameter Delimiter: ,  
Record Delimiter: ;  
Sending Product ID: C2IG (Cadkey, Inc.)

---

File Name: bgc12240.prt  
System ID: CADKEY/UX v5.02 07/02/92  
Preprocessor Version: C2IG/UX SUN v5.02 08/05/92  
Size of Integer: 16  
Sgl. Precision Mag: 38  
Sgl. Precision Sig: 7  
Dbl. Precision Mag: 308  
Dbl. Precision Sig: 15  
Receiving Product ID: bgc12240.prt  
Model Space Scale: 1.000000  
Unit Flag: 1  
Unit String: IN  
# of Line Weights: 1  
Maximum Line Width: 1.000000  
Creation Date: 08/12/93 10:53:32  
Minimum Resolution: 0.000050  
Maximum Coordinate: 0.000000  
Author:  
Organization: lad/bei  
IGES Version Number: 9  
Drafting Standard: 0  
Model Create/Modify Date: 08/10/93 16:30:41

Entity Summary:

Type	Form	Description
Count		
100	0	Circular Arc
9		
106	40	Witness Line
2		
110	0	Line
608		
124	0	Transformation Matrix
8		
206	0	Diameter Dimension
1		
212	0	General Note (Simple)
1		
212	1	General Note (Dual stack)
1		
212	6	General Note (Left justified)
148		
214	2	Leader (Triangle)
4		
216	0	Linear dim - undetermined form
1		

---

-----  
Total 783  
=====

Translation phase

\*\*\* Warning (ACAD\_I2AMAKESTYLEERROR) \*\*\*  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: SYMBOL3

\*\*\* Warning (ACAD\_I2AMAKESTYLEERROR) \*\*\*  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: SYMBOL2

IGES Entity Summary

Type	Form	Description	Count	Processed	Errors
100	0	Circular Arc	9	9	0
106	40	Witness Line	2	2	0
110	0	Line	608	608	0
206	0	Diameter Dimension	1	1	0
212	0	General Note (Simple)	1	1	0
212	1	General Note (Dual stack)	1	1	0
212	6	General Note (Left justified)	148	148	0
214	2	Leader (Triangle)	4	4	0
216	0	Linear dim - undetermined form	1	1	0
Totals			775	775	0

AutoCAD Entity Summary

Entity	Created	Errors
LINE	609	0
CIRCLE	3	0
TEXT	153	0
ARC	6	0
INSERT	5	0
POLYLINE	1	0
DIMENSION	2	0
BLOCK	6	0
Totals	785	0

Error Summary:

The following message was issued 1 time(s)  
IGES file has greater number of significant digits in single precision  
numbers than this system.

The following message was issued 2 time(s)  
Entity's substring #%d character box width equals zero.

The following message was issued 2 time(s)  
Entity's substring #%d character box width is negative.

The following message was issued 5 time(s)  
Error creating text style. Most likely could not open the  
shape file for a font. Text will be forced to STANDARD.  
The style attempted was named: %s

Status: 0  
Warning: 10  
Error: 0  
Fatal: 0

Elapsed Time:

Processor: 00:00:15  
Clock: 00:00:15

---

### 10.2.3 Output AutoCAD R12

#### 10.2.4 Output Cadkey v5.02

## 10.2.5 Output IGESView

4 3 2 1

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: THERMOPLASTIC POLYESTER TYPE  
TPES 110 PER ASTM D4507-85.

2. IDENTIFY PER MIL-STD-130  
DO NOT MARK ON PART.

REV STATUS REV -  
OF SHEETS SH 1

REVISIONS

REV DESCRIPTION BAR APPROVED  
X1 DESIGN UPDATE 5-1-93

*PRELIMINARY*

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MAJOR - XXXX  
MINOR - XXXX

CLASSIFICATION NUMBER

1 THRU 99 - CRITICAL  
101 THRU 999 - MAJOR

METHOD OF INSPECTION

S = SPECIAL INSPECTION EQUIPMENT  
C = COMMERCIAL INSPECTION EQUIPMENT  
V = VISUAL

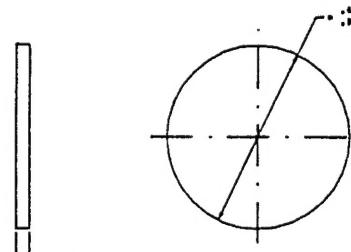
3320AS1224

ITEM	REV	DATE	PART NO.	DESCRIPTION	SPECIFICATION	NOTES
PARTS LIST						
ITEM	REV	DATE	PART NO.	DESCRIPTION	NOTES	
CAP, CHARGE HOLDER						
ITEM	REV	DATE	PART NO.	DESCRIPTION	NOTES	

4 3 2 1

43

## 10.2.6 Output IGESWorks

<p><b>NOTES: UNLESS OTHERWISE SPECIFIED</b></p> <ol style="list-style-type: none"> <li>1. MATERIAL: THERMOPLASTIC POLYESTER TYPE TYPE 110 PER ASTM D4587-65.</li> <li>2. IDENTIFY PER MIL-STD-136. DO NOT MARK ON PART.</li> </ol>	<p>4</p> <p>3</p> <p>2</p> <p>1</p>	<p>4</p> <p>3</p> <p>2</p> <p>1</p>																																																																																																											
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<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p><b>DISSEMINATION NOTICE:</b> FOR UNCLASSIFIED DOCUMENTS, FOLLOW THE PROCEDURES IN THE 1992 EDITION OF THE DEPARTMENT OF DEFENSE, SECTION 31-12 OF DOD 5200.7-1, INFORMATION DISSEMINATION REGULATION, CHAPTER 21. THE UNCLASSIFIED, LIMITED INFORMATION, DISSEMINATION NOTICE WILL ALLOW DIVULGATION OF CONTENTS OF DISSEMINATION OF THE DOCUMENT.</p> </div>																																																																																																													
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## 10.2.7 Output iges2draw/IslandDraw

## 10.2.8 Output Preview

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<p>NOTES: UNLESS OTHERWISE SPECIFIED</p> <ol style="list-style-type: none"> <li>1. MATERIAL: THERMOPLASTIC POLYESTER TYPE TPE 110 PER ASTM D4507-85.</li> <li>2. IDENTIFY PER MIL-STD-130. DO NOT MARK ON PART.</li> </ol>																											
<p><b>PRELIMINARY</b></p>																											
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